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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/930,714 | 08/15/2001 | Anne Kienappel | DE 000121 | 1661 |

24737 7590 09/22/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

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| EXAMINER |
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LERNER, MARTIN

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| ART UNIT | PAPER NUMBER |
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2654

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 09/930,714 | Applicant(s) KIENAPPEL, ANNE | |
| | Examiner Martin Lerner | Art Unit 2654 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 to 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/15/01 & 4/1/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

Phoneme Assignment for Multi-Lingual Speech Recognition

2. The disclosure is objected to because of the following informalities:

The Specification does not contain section headings according to conventional patent practice in the United States. It is suggested that section headings be added for Background of the Invention, Summary of the Invention, Brief Description of the Drawings, and Detailed Description of the Preferred Embodiments.

On page 4, lines 6 to 7, reference should be deleted to claim 1. Claimed subject matter of an issued patent may not reflect originally filed claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim contains a parenthetical "(SAMPA)", which renders it indefinite. The scope of the claim is not well defined because it is unclear whether "SAMPA" is to be considered a positive limitation of the claim, as a specific form of phonetic transcription, or whether "SAMPA" is only to be considered an example of one of many possible forms of phonetic transcription. If "SAMPA" is a positive limitation of the claim, then, for purposes of clarity, the acronym should be written in a non-abbreviated form.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 to 5 and 7 to 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kohler* ("*Multi-lingual phoneme recognition exploiting acoustic-phonetic similarities of sound*") in view of *Barry et al.* ("*The simultaneous use of three machine speech recognition systems to increase recognition accuracy*").

Concerning independent claim 1, *Kohler* discloses a method of assigning phonemes for multi-lingual phoneme modeling in speech recognition, where a distance measure determines a similarity for substitution of phonemes from a source language into a target language. (Sections 3.5 and 4.2: Pages 2196 to 2197) *Kohler* suggests language-dependent phoneme assignment by a plurality of methods, including automatically aligning labels and hand labeled transcriptions (Section 4.1: Page 2197),

but omits two or more different phoneme assigning methods, where a phoneme is detected and selected by a majority of the different speech data assigning methods if a majority have a matching assignment, but a phoneme is selected by at least one of the different phoneme assigning methods in accordance with a similarity parameter.

However, utilizing two or more different phoneme assigning methods, and then selecting if a majority have a matching assignment is equivalent to a majority rules algorithm. *Barry et al.* teaches an analogous art method with an Enhanced Majority Rules (EMR) software algorithm for speech recognition, where three speech recognition systems increase recognition accuracy. Recognition data is collected from each of three systems and if multiple responses are returned, or if two or more systems agree, and there is a clear majority, then the chosen word is reported. If there is no clear majority, then a word with a lowest average distance score is chosen. (Pages 668 to 669: Figure 2) It would have been obvious to one having ordinary skill in the art to apply a majority rules algorithm as taught by *Barry et al.* to a multi-lingual phoneme assignment method of *Kohler* for the purpose of increasing recognition accuracy.

Concerning claim 2, *Kohler* discloses multi-lingual phoneme substitution for a plurality of source languages, e.g. English, German, and Spanish (Abstract; Sections 3.1 and 4.2: Tables 1 and 2).

Concerning claim 3, *Kohler* discloses clustering or substitution of phoneme models by a distance or similarity measure (Section 3.5: Page 2196) for international phonetic transcriptions including SAMPA (Section 3.2: Page 2196).

Concerning claim 4, *Kohler* discloses cross-language phoneme model substitution by a distance metric, where phonemes are substituted that have the smallest distance or highest similarity to each other (Section 4.2: Page 2197).

Concerning claim 5, *Kohler* discloses cross-language phoneme model substitution for speech recognition to obtain a highest phoneme recognition rate (Sections 4.1 to 4.3: Tables 2 to 4: Pages 2197 to 2198).

Concerning claims 7 and 8, *Kohler* discloses cross-language phoneme model substitution, which is implicitly a program stored and executed on a computer.

7. Claims 6, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kohler* ("*Multi-lingual phoneme recognition exploiting acoustic-phonetic similarities of sound*") in view of *Barry et al.* ("*The simultaneous use of three machine speech recognition systems to increase recognition accuracy*") as applied to claim 1 above, and further in view of *Kohler* ("*Language adaptation of multilingual phone models for vocabulary independent speech recognition tasks*").

Concerning claim 6, *Kohler* ("*Multi-lingual phoneme recognition exploiting acoustic-phonetic similarities of sound*") suggests cross-language phoneme model substitution for automatic speech recognition, where phoneme models are trained by a standard viterbi-based maximum likelihood training algorithm (Section 4: Page 2196), but does not expressly disclose adapting an assigned basic phoneme unit to the target language after assignment from a source language. However, *Kohler* ("*Language adaptation of multilingual phone models for vocabulary independent speech recognition*")

tasks”) teaches language adaptation of multilingual phone models, where a phone model is adapted to a new target language by MAP-Adaptation (Section 3.2: Map-Adaptation (MAP): Page 419). The objective is to reduce the amount of training data for cross language transfer, thereby reducing time and expense. (Section 1. Introduction: Page 417) It would have been obvious to one having ordinary skill in the art to adapt phoneme models to a target language after cross-language phoneme substitution from a source language as taught by Kohler (*“Language adaptation of multilingual phone models for vocabulary independent speech recognition tasks”*) in the method of cross-language phoneme model substitution of Kohler (*“Multi-lingual phoneme recognition exploiting acoustic-phonetic similarities of sound”*) for the purpose of reducing time, expense, and amount of training data.

Concerning claims 9 and 10, Kohler (*“Multi-lingual phoneme recognition exploiting acoustic-phonetic similarities of sound”*) discloses phoneme models for speech recognition.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Bub et al., Köhler ('500), and Fabiani et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-

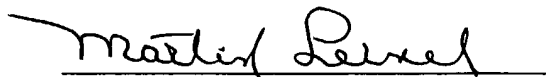
Art Unit: 2654

9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
9/14/04


Martin Lerner
Examiner
Group Art Unit 2654